

THE CONSUMER CONSERVATION EDUCATION GUIDEBOOK

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**All opinions, findings, conclusions, or recommendations expressed herein are those of the author(s)
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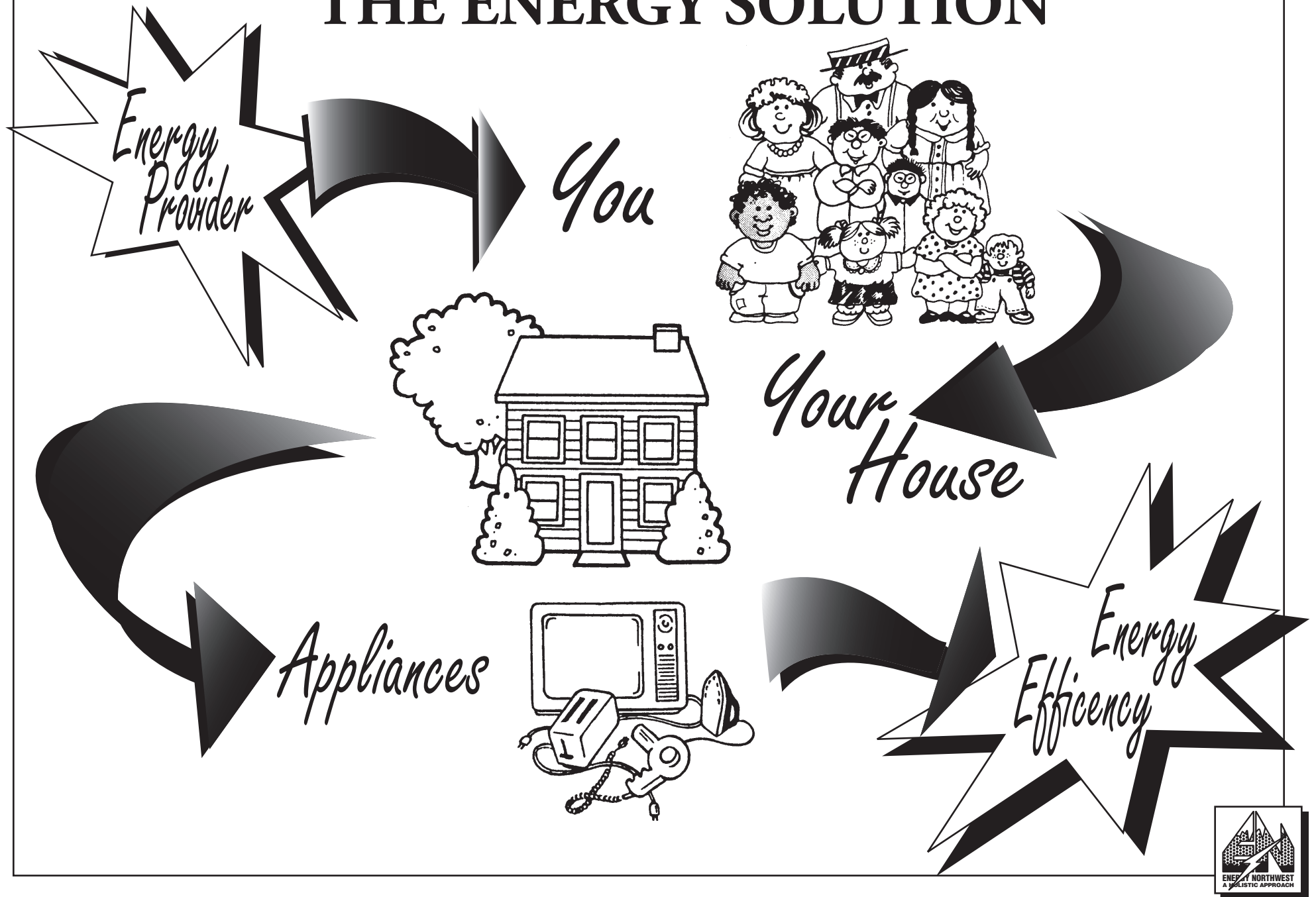
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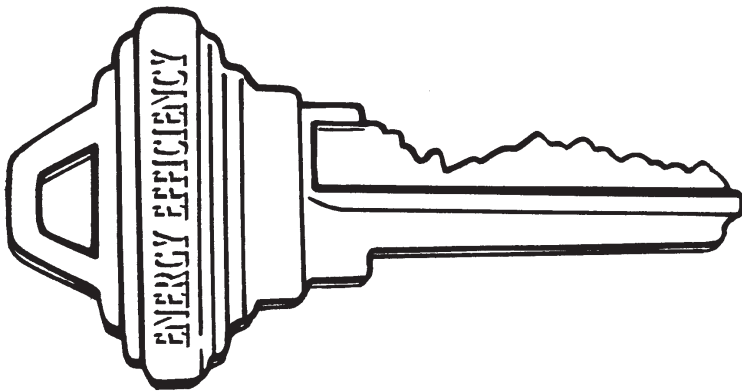
**The developers of the Consumer Conservation Education Guidebook would like to acknowledge
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Guidebook, and the State of Alaska Department of Community and Regional Affairs, Office of Energy Programs.**

THE ENERGY SOLUTION



THE *KEY* TO ENERGY EFFICIENCY

We all know that energy costs money. To make the most of our energy dollar, we need to focus on three key areas ...



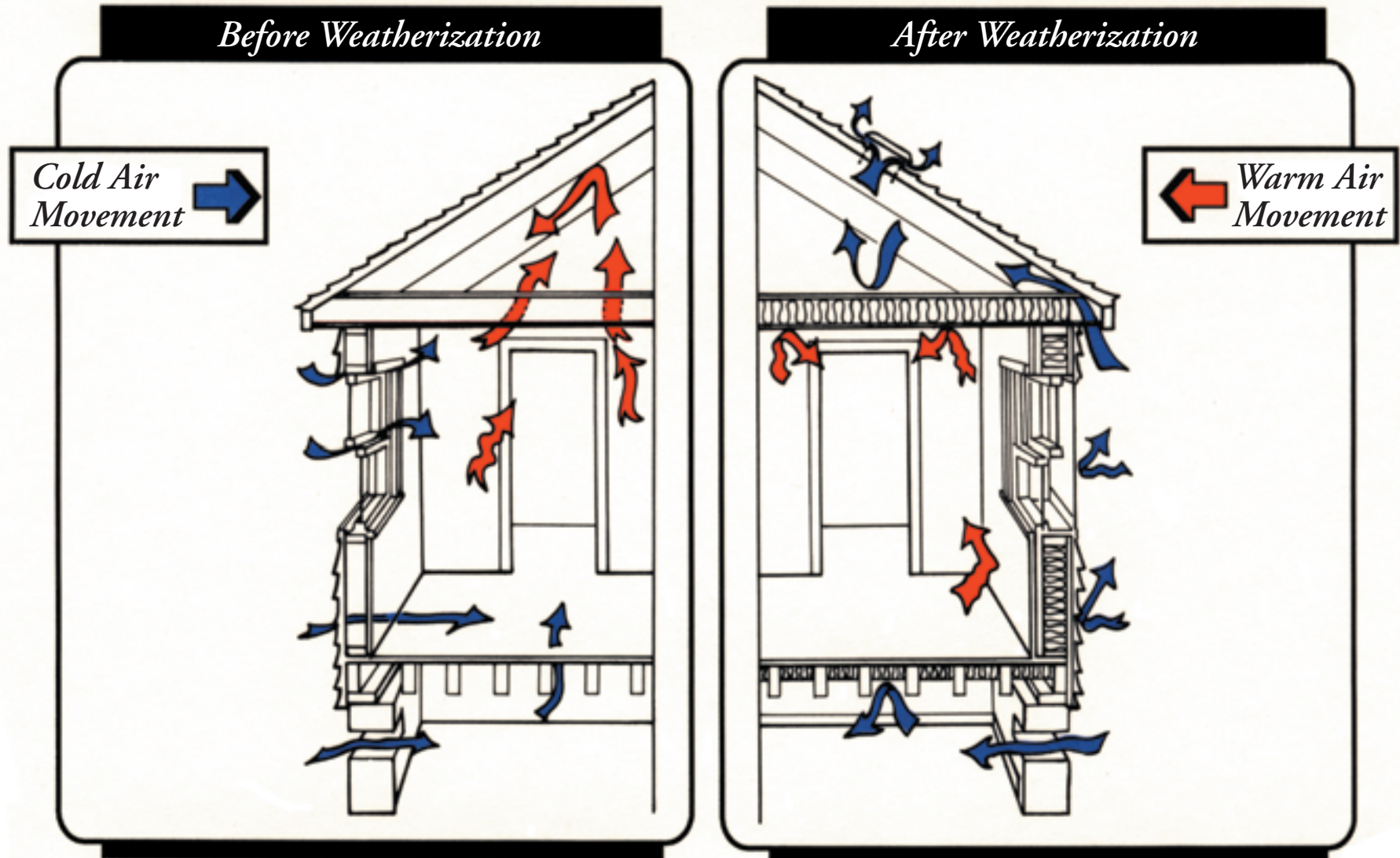
All three points will determine how much energy we will use and how comfortable we are in our homes.

1. How we use energy in our daily lives.
2. How well our heating and cooling system is working.
3. How well our home holds heat in the winter and stays cool in the summer.

AIR INFILTRATION

- * Air movement through a home is natural. All homes need fresh air. However, some homes have too much fresh air, while other homes have too little.
- * When you heat your home, you increase the pressure inside. As the heated air expands, it finds cracks and holes through which to escape. Cracks and holes near the ceiling and in the attic provide the best escape routes. As the warm air escapes, cooler air will try to enter wherever it can. For example, cool air will enter under the door, around windows, through cracks and holes, around pipes and wires, and down the chimney (when not in use).
- * Remember, warm air is lighter and will try to escape through cracks and holes near the ceiling. Cool air is heavier and will try to enter your home through cracks and holes near the floor and around windows. Because of the pressure difference between the space inside your home and the outside, air will always try to enter if the air inside your home escapes. In the winter, cold air will try to enter your home. In the summer, the cool air in your home will try to escape, allowing hot air to enter.
- * The weatherization auditor or crew will use a tool called a “blower door” or “door fan” to pull air in or push air out of your home. By doing this, they will find places where air is moving in or out. By using the blower door, the auditor or crew can determine how much air your home needs and will patch or show you where to patch unnecessary air leaks.
- * Stopping air leaks will make your home more comfortable in all seasons.

AIR INFILTRATION

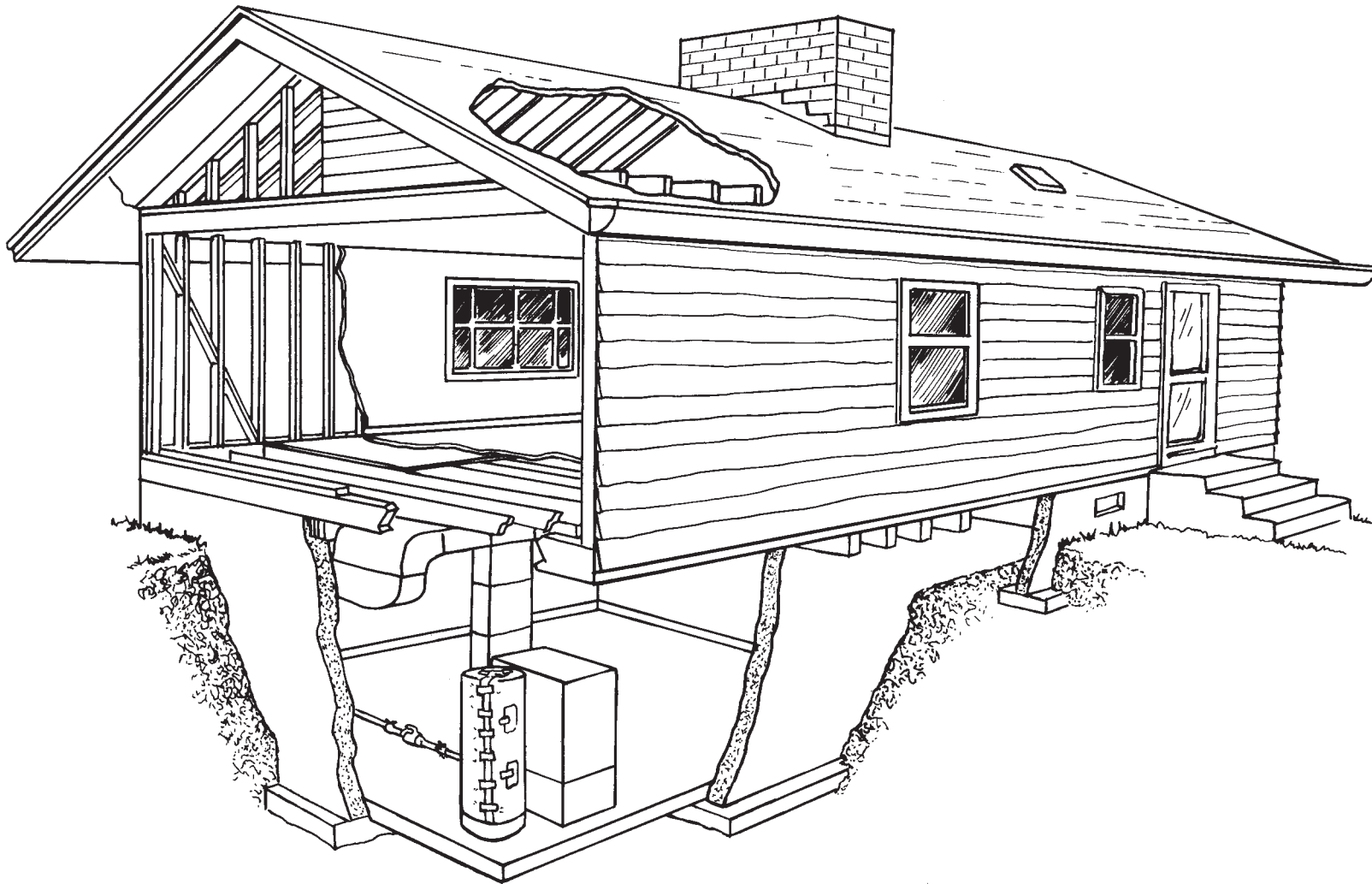


INSULATION

- * There are many kinds of insulation: cellulose, fiberglass, rock wool, vermiculite, and rigid board, to name a few. All insulation does the same thing, it provides “resistance” to the movement of heat. In weatherization, we call the resistance of insulation the “R-Factor,” which is defined by a number; for example, R-12, R-19, and R-38. The higher the R-number, the better the insulation will be at resisting the movement of heat.**
- * Generally, you will notice a difference once your home is insulated.**
- * As a rule, attic or ceiling insulation is R-38, wall insulation is R-11, floor insulation is R-19, water heater wraps are R-11 or R-12, water pipes are wrapped with R-6, and heating ducts are insulated with R-11.**
- * Insulation works best when it stays where it was placed and is not compacted or crushed by walking or storing things on it.**
- * Once your home is insulated, check the insulation to make sure that nothing disturbs it. If you find it out of place, simply put it back the way it was.**
- * When a crawl space is present, a plastic ground cover will be used to keep moisture out. Some insulation comes with a paper or foil covering. This covering is called a vapor barrier.**

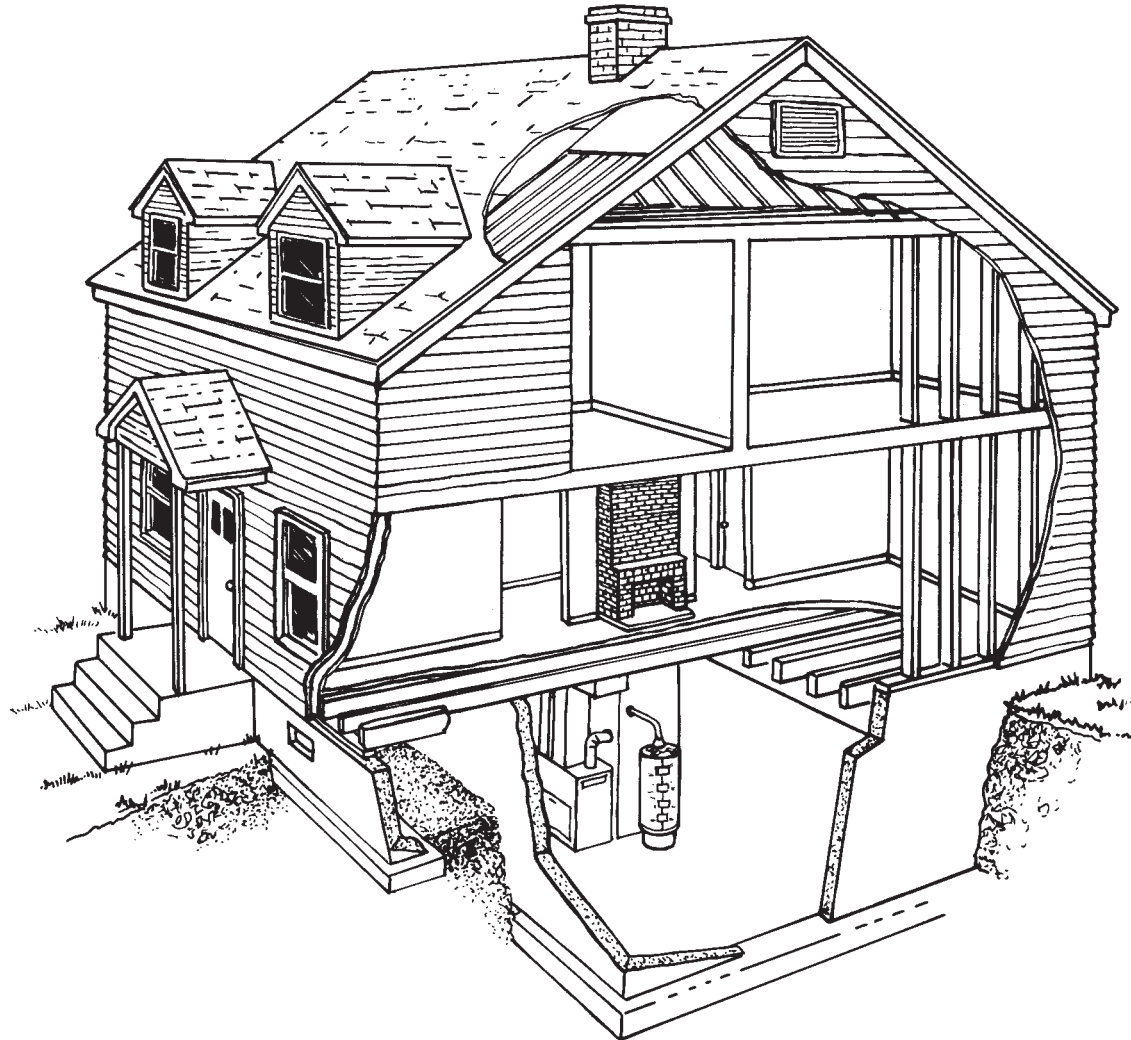
INSULATION

One Story



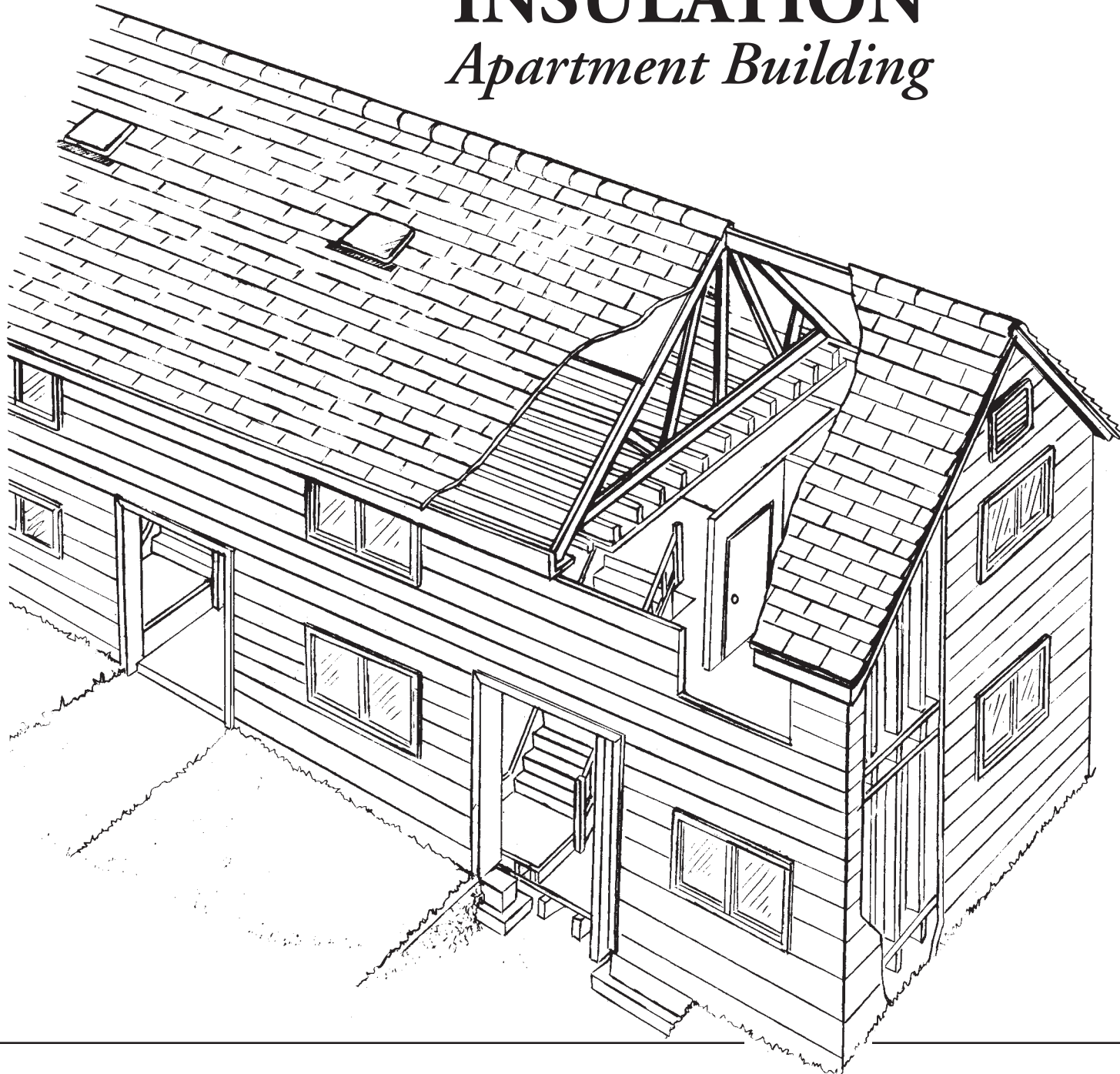
INSULATION

Two Story



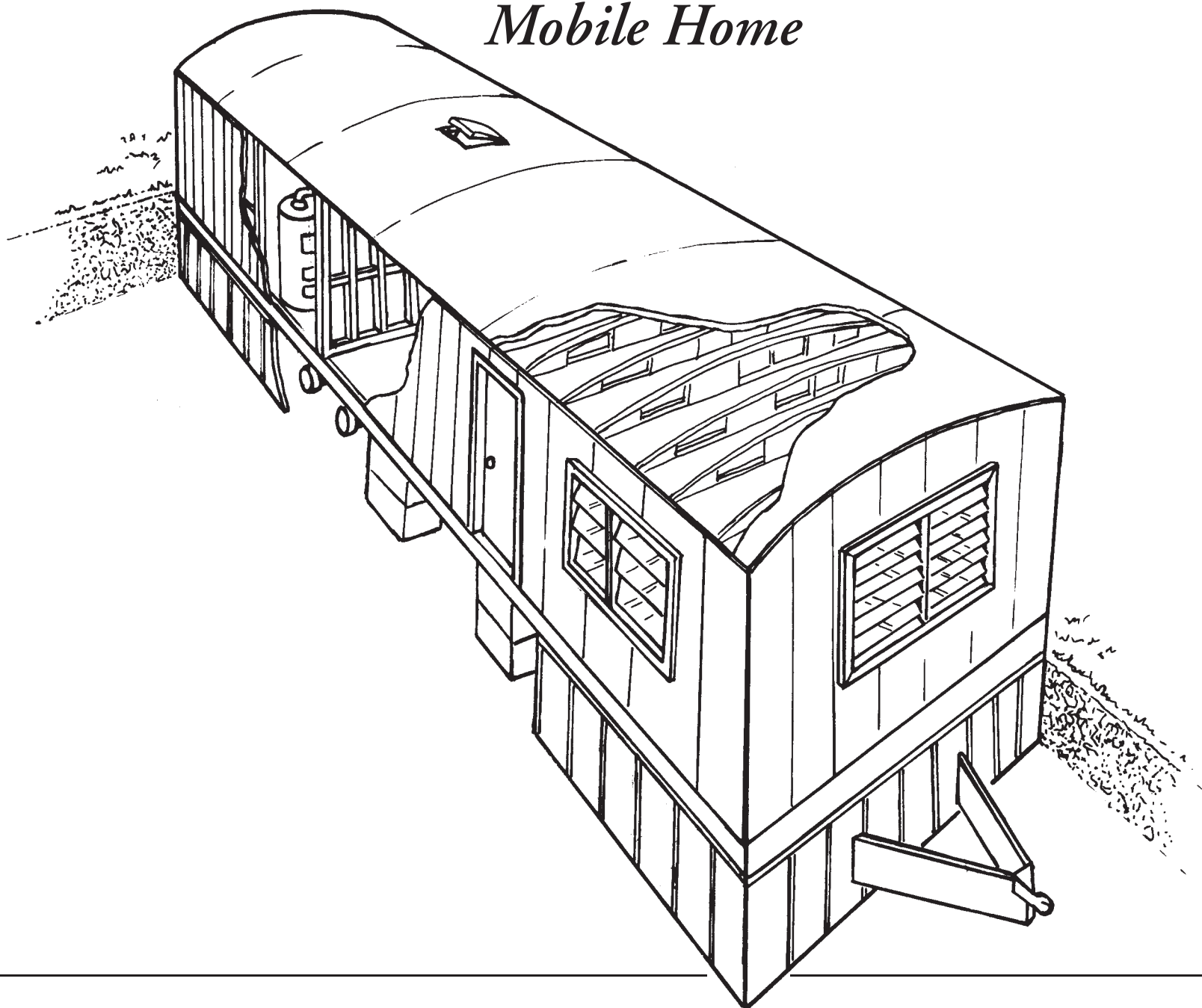
INSULATION

Apartment Building



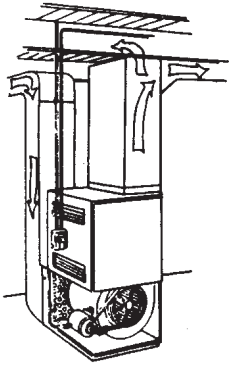
INSULATION

Mobile Home

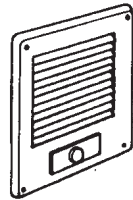


HEATING SYSTEMS

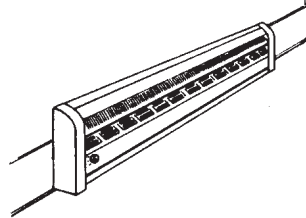
Electric Heat



Forced Air

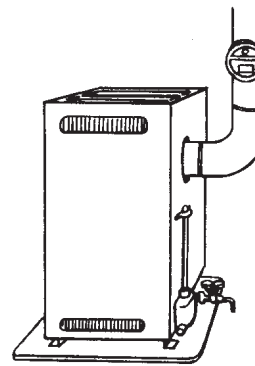


Wall

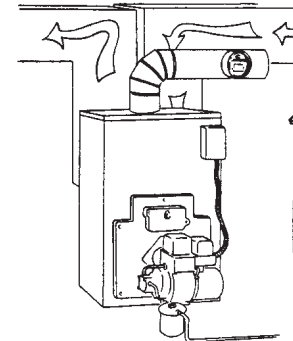


Baseboard

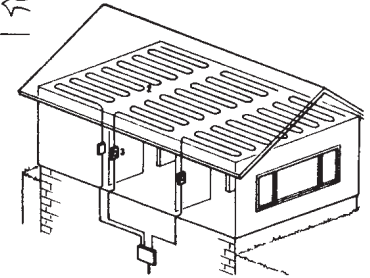
Oil Heat



Drip

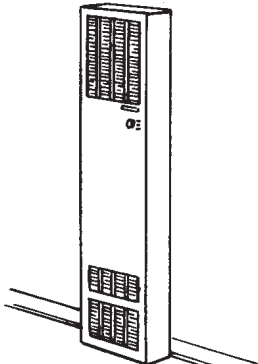


Forced Air

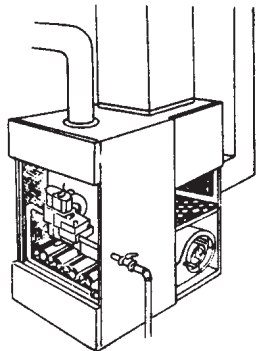


Hydronic

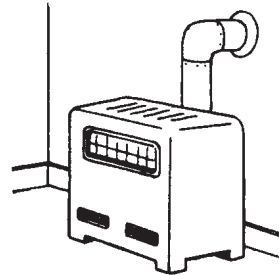
Gas Heat



Wall

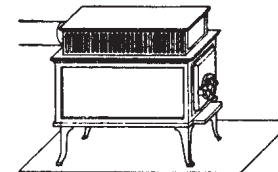


Forced Air

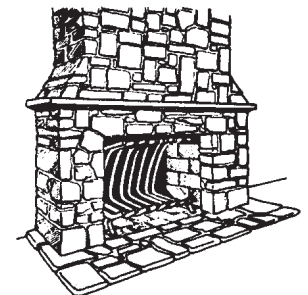


Space

Wood Heat



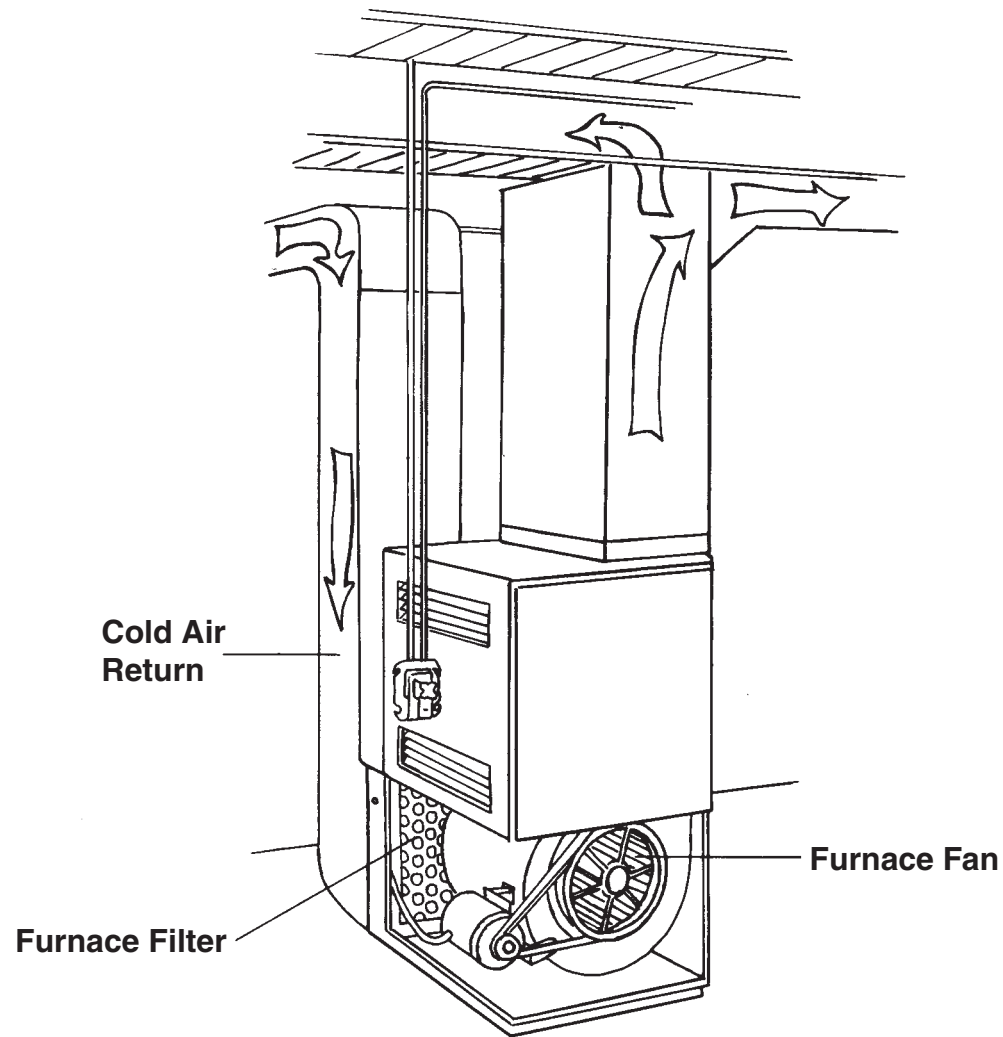
Stove



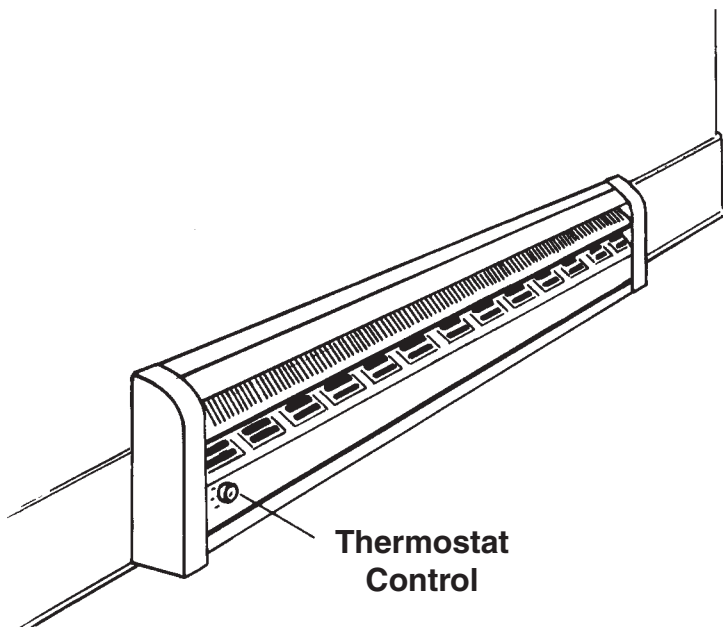
Fireplace



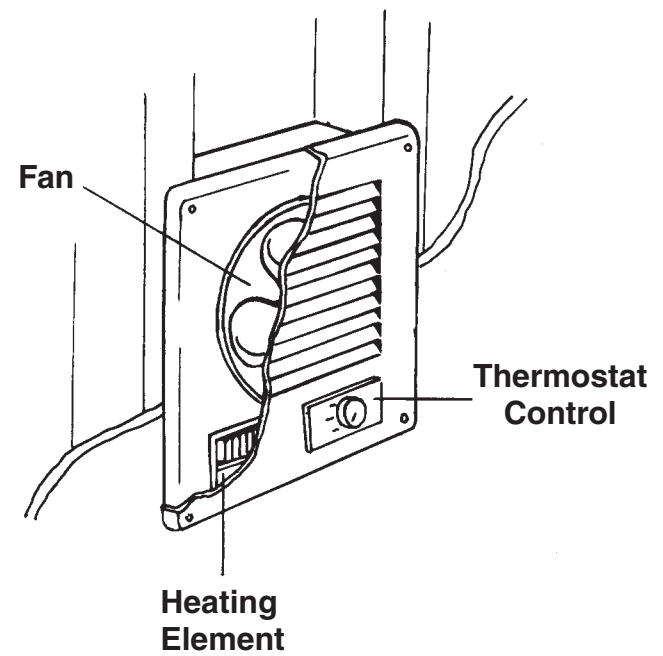
ELECTRIC FORCED AIR *Heating System*



BASEBOARD HEATER

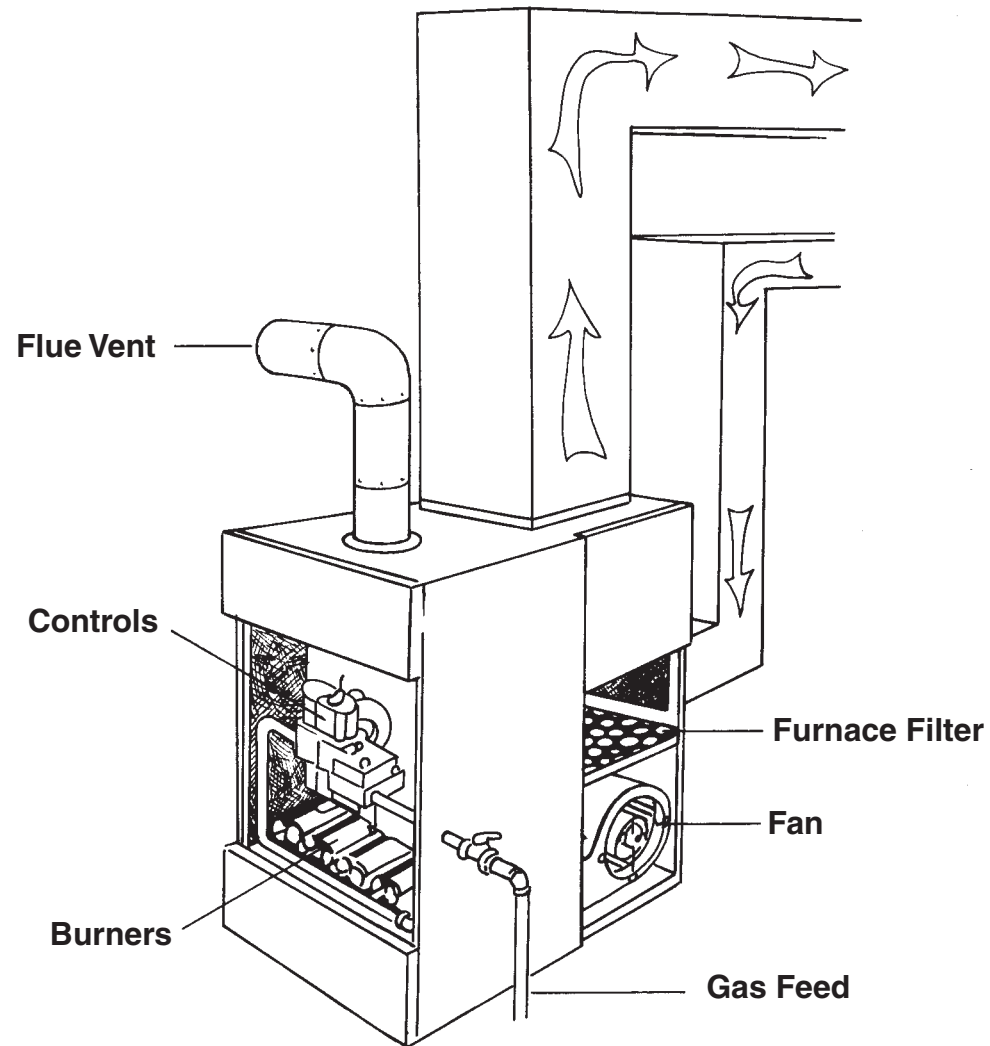


WALL HEATER



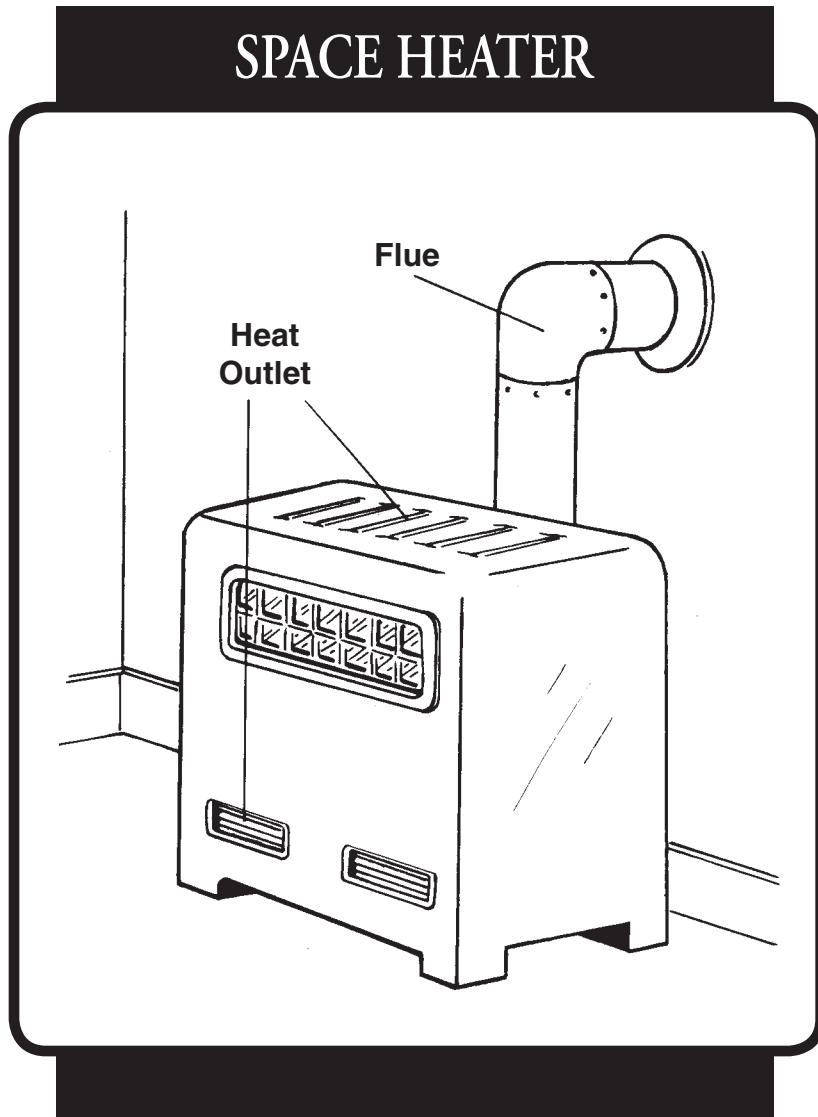
GAS

Heating System

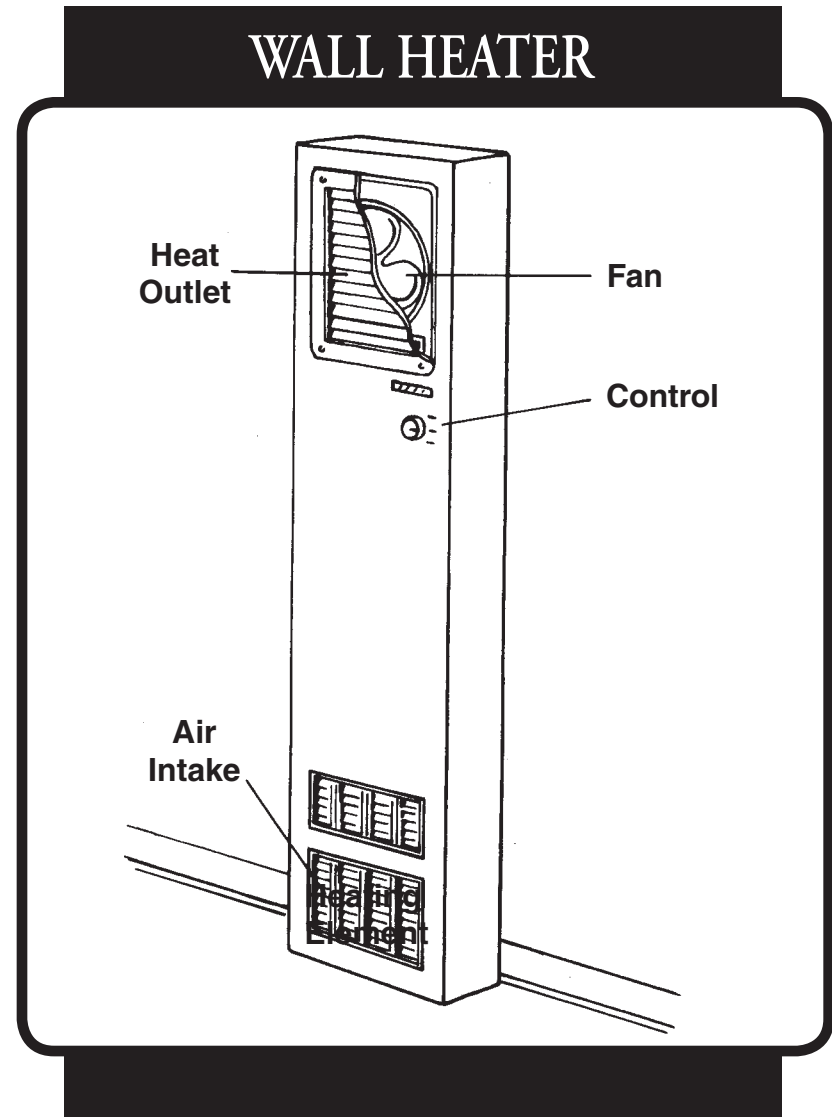


GAS

SPACE HEATER

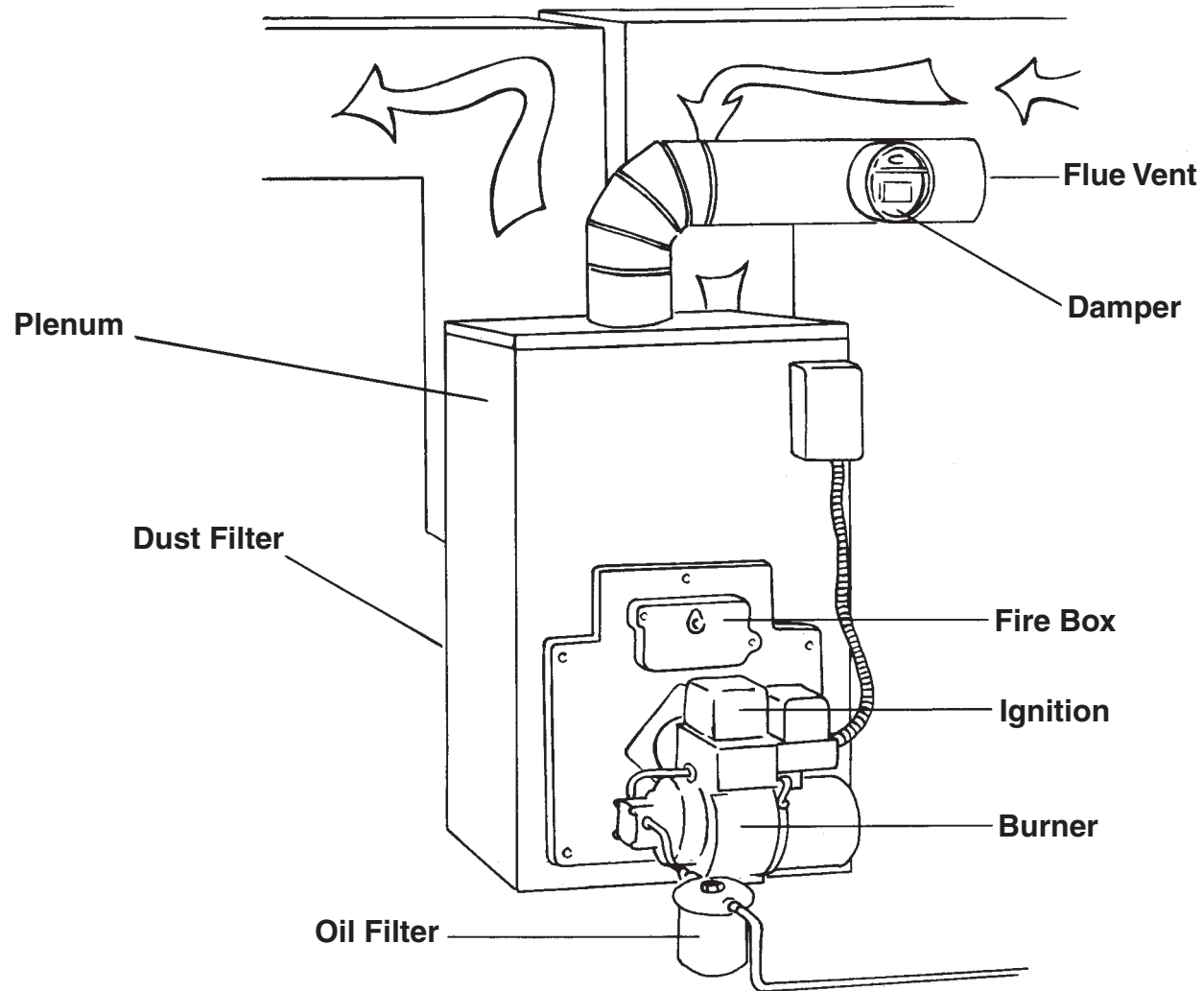


WALL HEATER



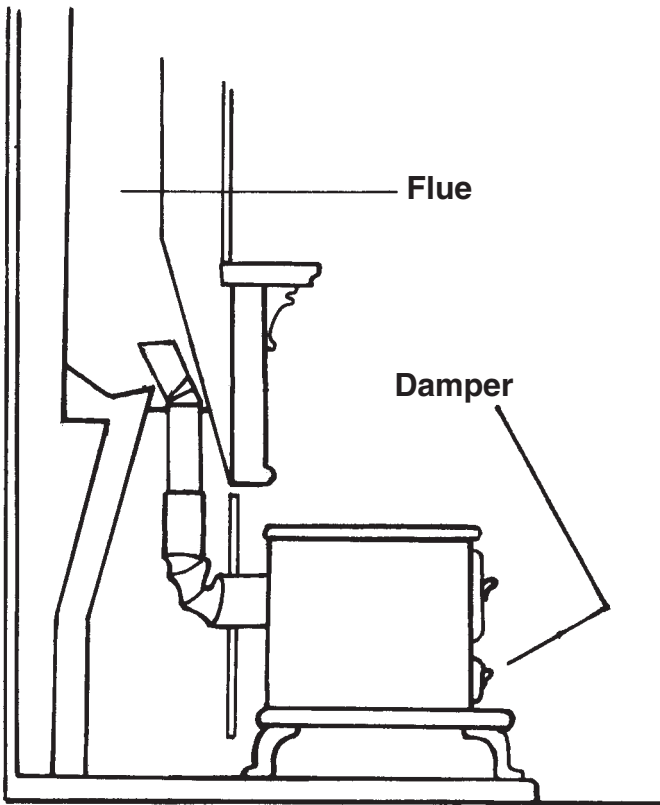
OIL FURNACE

Heating System

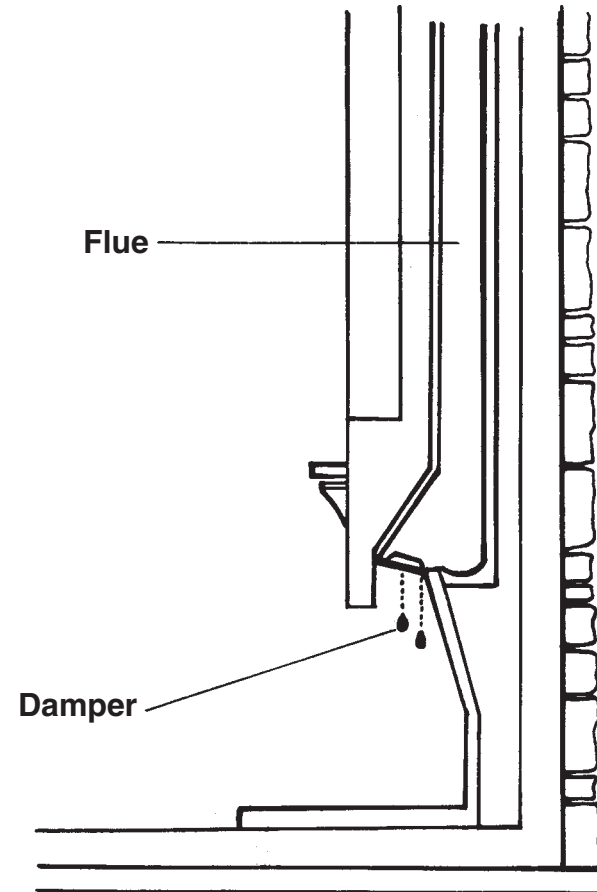


WOOD BURNING HEATERS

Wood/Pellet Stove



Fireplace

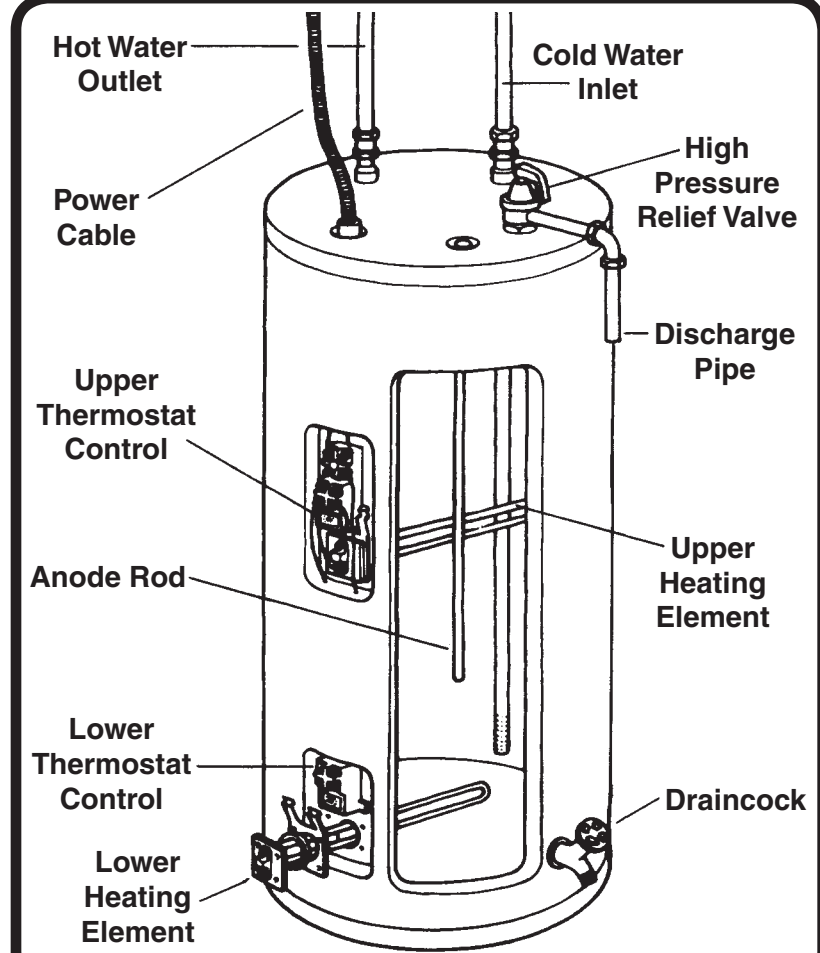


WATER HEATERS

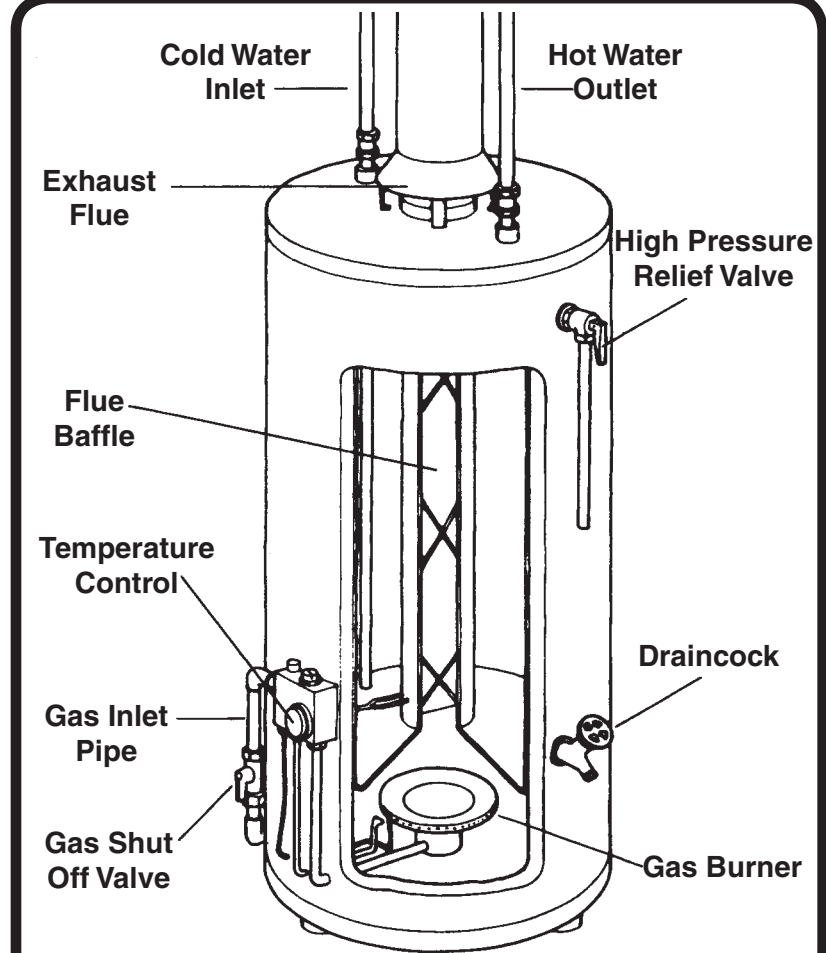
- * Heating water can be one of the biggest uses of energy in your home.**
- * You can reduce the energy used to heat water by: lowering your water heater setting to 120°, using less hot water, wrapping your water heater, and cleaning out sediment from the water heater tank.**
- * Most electric water heaters have two heating elements; both need to be set at 120° or lower.**
- * Gas water heaters heat the water from the bottom of the tank. Because a gas flame is used, a gas water heater should never be wrapped all the way to the floor.**
- * Gas water heaters also need to be vented to the outside. Care needs to be taken to ensure that the venting system is in working order.**
- * All water heaters should have a high pressure release valve. Make sure the valve is not covered when the water heater is wrapped.**
- * Wrapping your water pipes will help save hot water, energy, and money.**

WATER HEATERS

ELECTRIC WATER HEATER

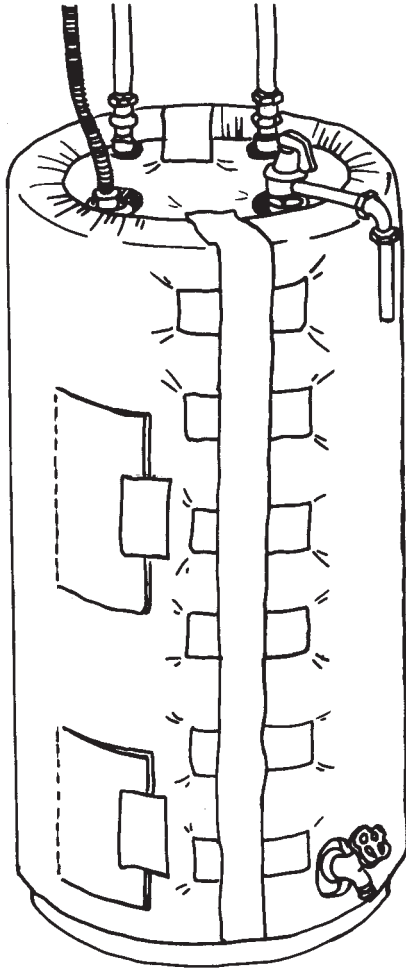


GAS WATER HEATER

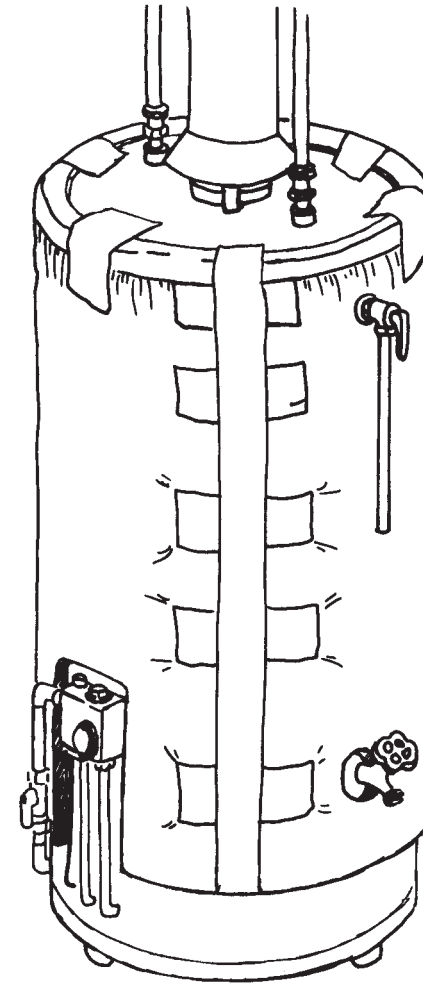


WATER HEATERS WRAPS

ELECTRIC WATER HEATER WRAP



GAS WATER HEATER WRAP



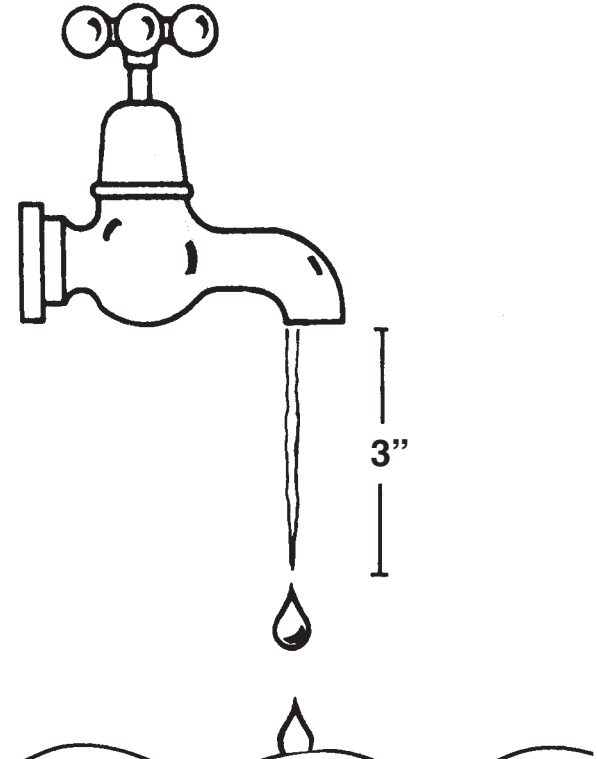
WATER LEAKS

30 DROPS PER MINUTE =



50 GALLONS PER MONTH

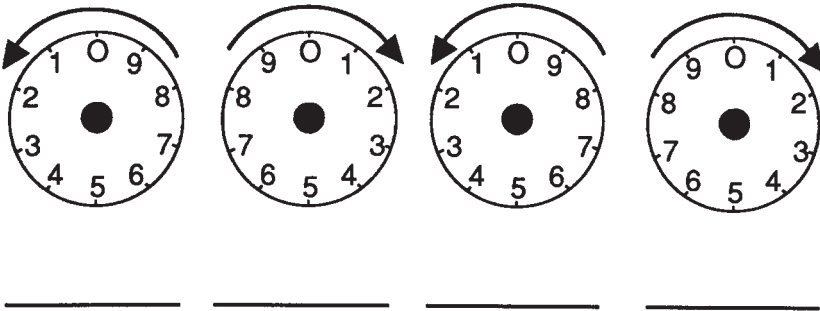
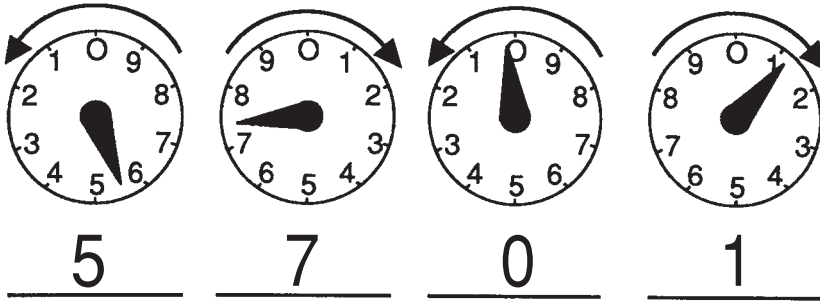
THREE INCH SOLID STREAM =



679 GALLONS PER MONTH

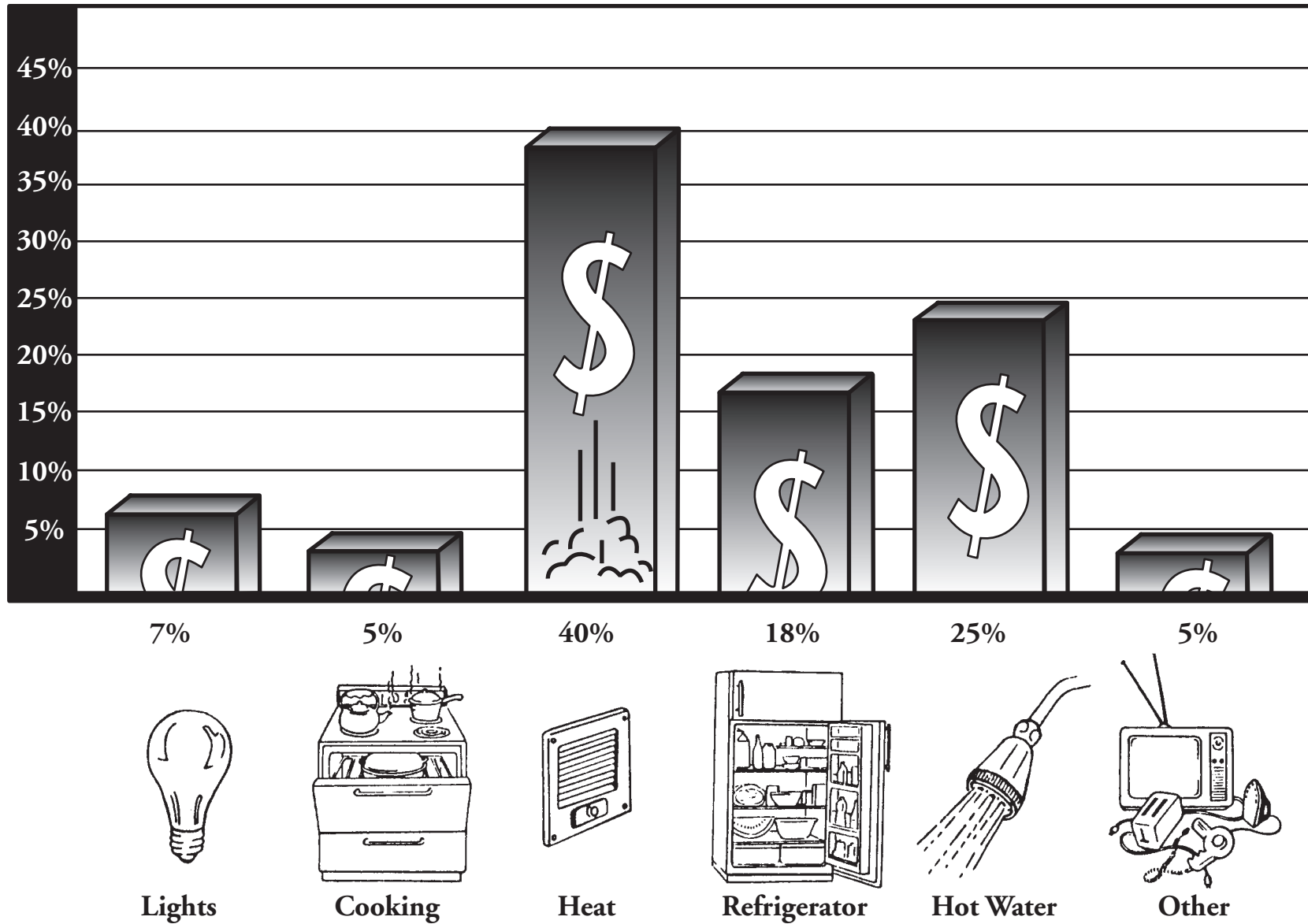
READING YOUR METER

Electric or Gas

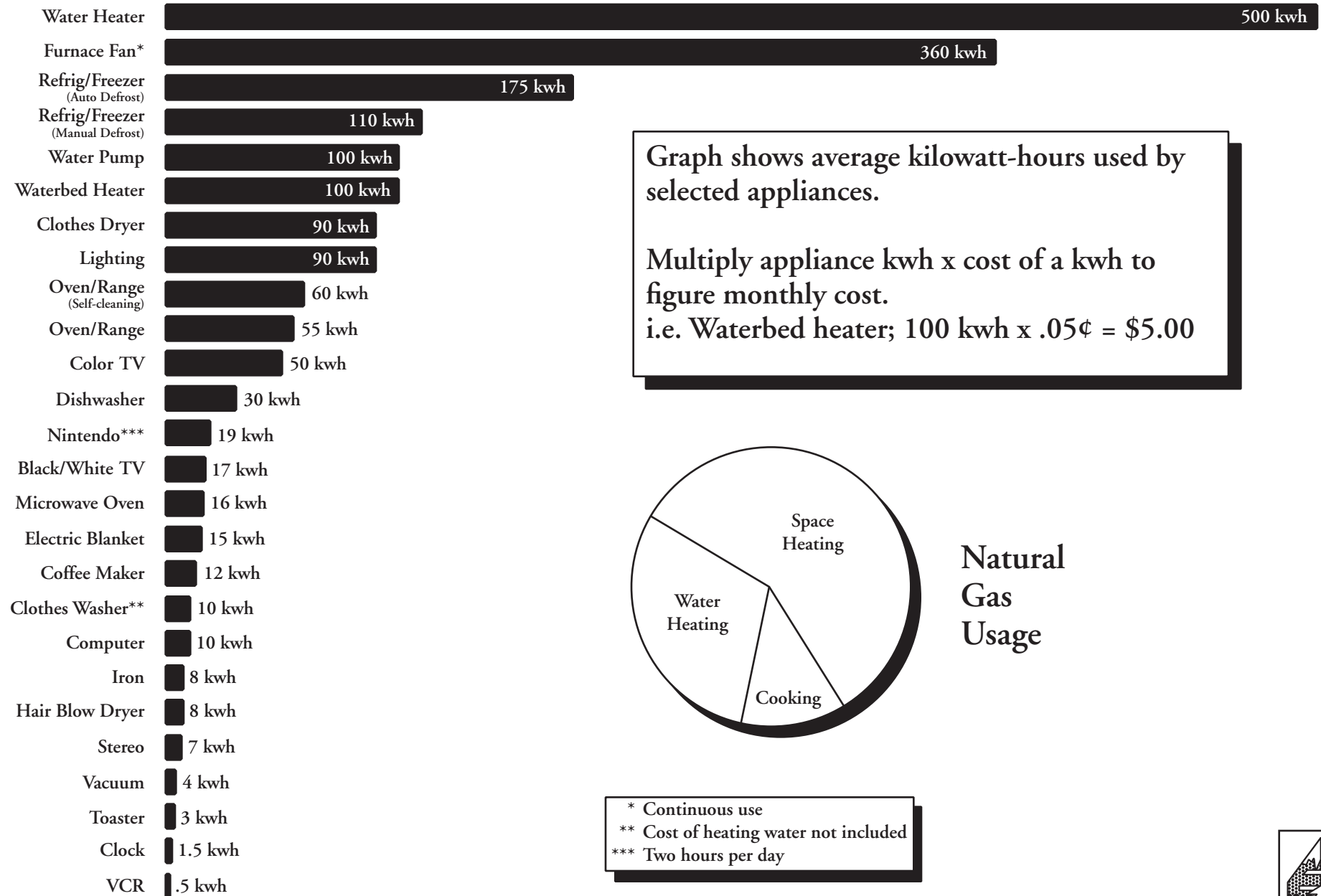


1. Read the meter dials from right to left and record the reading in the same way.
2. When the point is between two numbers, record the smaller (lower) number.
3. If you are not sure whether or not the pointer has reached the next number, check the dial to the right. If the pointer is not on or slightly past the zero, record the lower number.
4. Subtract the last reading from your present reading. (If your meter has a multiplier, multiply by that number.) This will tell you the amount of kilowatt hours or cubic feet of natural gas you have used.

HOME ENERGY USE



AVERAGE MONTHLY APPLIANCE USAGE



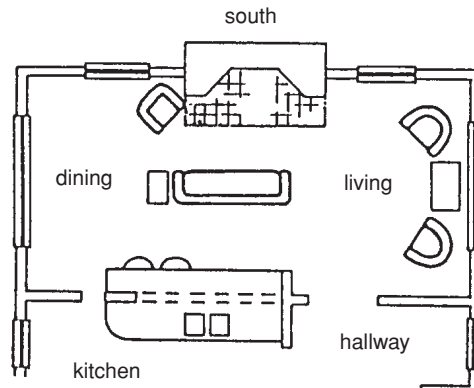
TOMORROW'S ENERGY BEGINS AT HOME

ENERGY WATCHERS' CHART

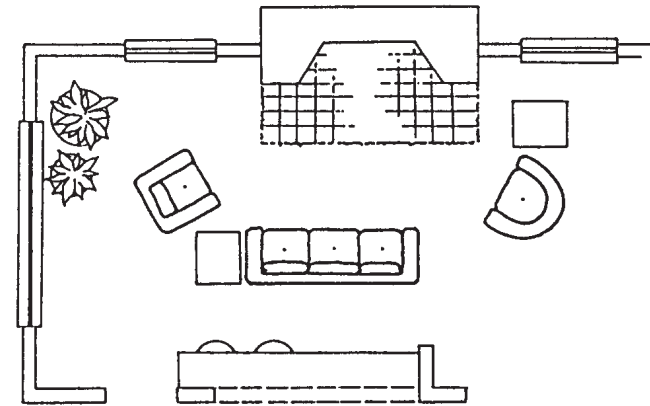
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THE COMFORT ZONE

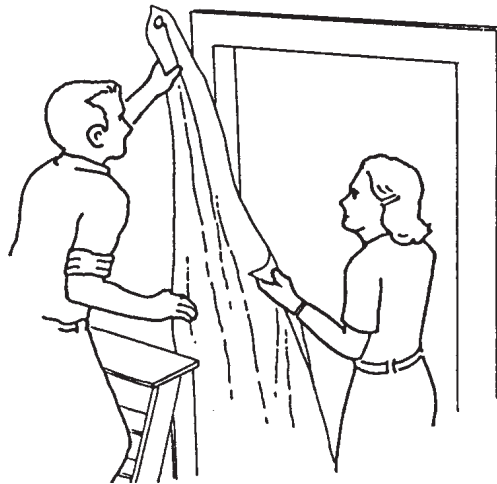
Create one warm room in your home. By heating less space, you can save money. Select a room to be the comfort zone. Adjust the thermostat so the other areas of your home are heated only to 55° or 60°.



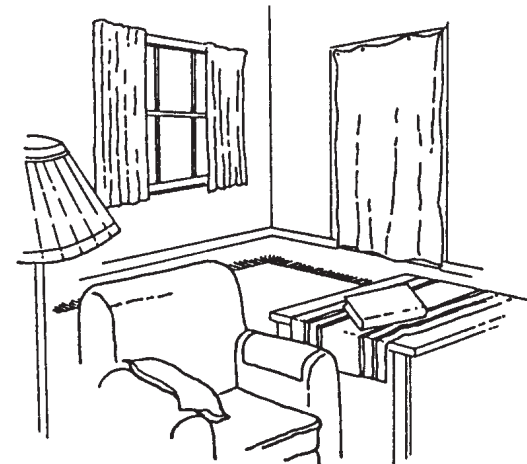
Select a comfortable room with few outside walls and, if possible, south-facing windows and a heating source, such as a heat register, baseboard, or space heater.



Arrange chairs in a horseshoe fashion in the center of the room, away from walls and windows.



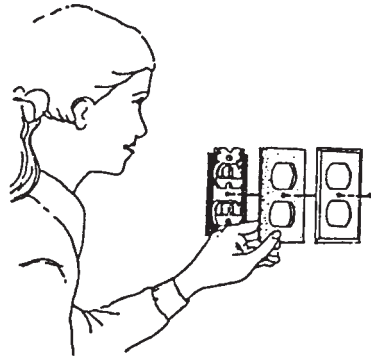
Shut the room off from the rest of the house. Hang blankets in open doorways of the warm room.



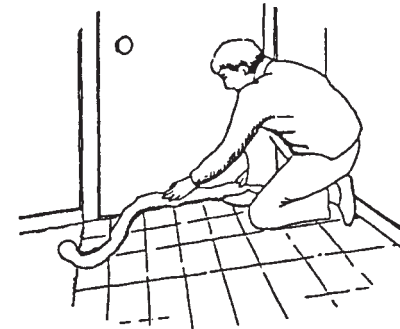
Overstuffed chairs, lap blankets, and reading lights help. Use space heaters safely. Seniors and children should take precautions against hypothermia.

ONE MINUTE WARM-UP

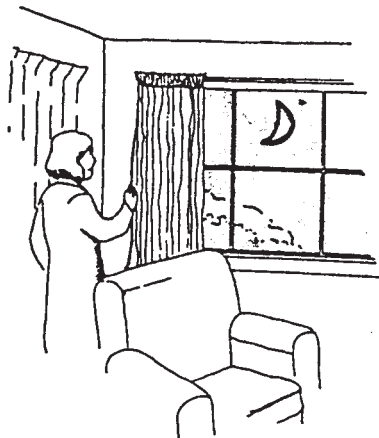
The following steps take just a few minutes of your time and can stop drafts in your home, saving you money.



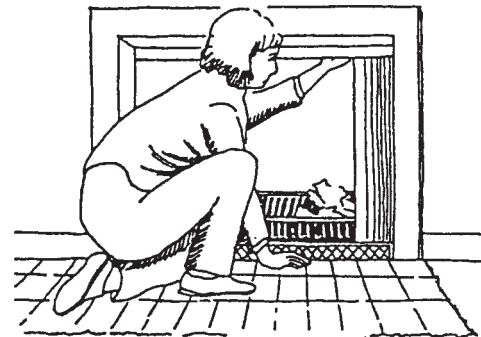
Turn off the electricity before installing foam gaskets. Use gaskets behind outlet covers and switchplates. Replace switchplate and outlet covers if missing. Look for special covers with plugs that cover outlet holes.



Scrap cloth sewn into a tube and filled with coarse sand makes a door snake. Place the snake against the bottom of the door to stop drafts. A rolled up rug will also work.



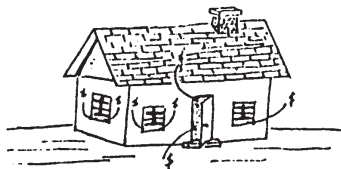
Close drapes at night and open them in the morning. Windows on the south side will let in more sunlight and warmth.



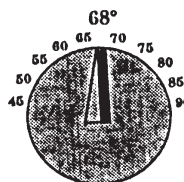
Close the fireplace damper when the fireplace is not in use. If you do not use the fireplace, close it off with a large piece of cardboard. This will prevent drafts.

LIVING IN A WEATHERIZED HOME

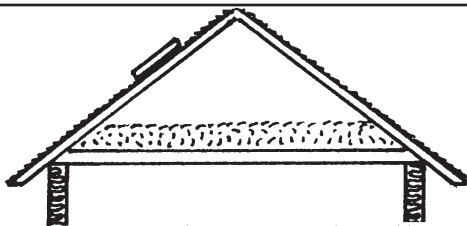
Now that your home has been weatherized, there are some things you should know.



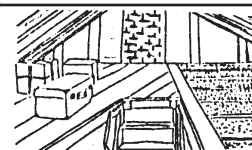
Your home will stay warmer in the winter and cooler in the summer. But, if it gets too warm in the winter, opening the door or windows will waste energy and cost you money.



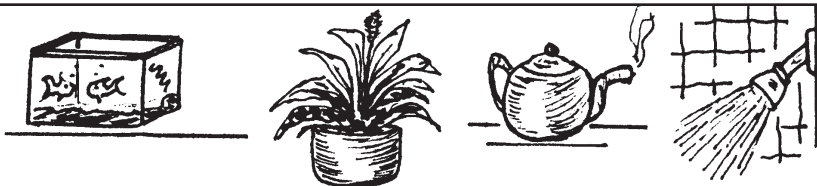
Set your thermostat at 68° or lower until you feel comfortable. At night, or if you plan to be away from home for several hours, turn the thermostat down to 55°.



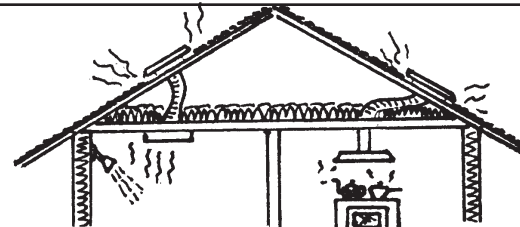
Once the insulation is in place, avoid walking on it or storing boxes and other things on it.



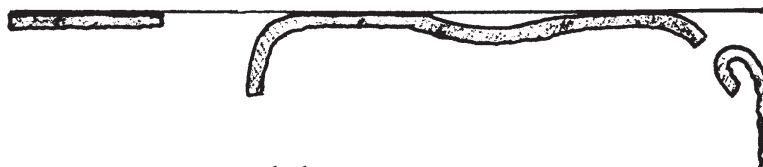
The insulation works best if it is not crushed or compacted. If you need a storage area, use a place near the attic access, lay a few boards down and store on top of them.



Moisture is given off in many ways: cooking, bathing, house plants, aquariums, and breathing. Moisture will cause problems if it cannot get out.



Use bathroom and kitchen exhaust fans when bathing and cooking.



Weatherstripping around doors sometimes comes loose from use.



If you see weatherstripping that has fallen down, tack it back up or replace it. It will not help you save energy if it is on the ground.

A weatherized home works best when you work to control your energy use.

MOISTURE CAN BE A PROBLEM

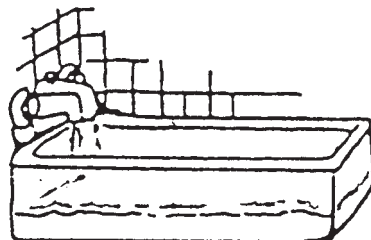
When you see moisture on windows, walls, floors, and ceilings, or if mildew, mold, and fungus are growing in your home, you have a moisture problem.

Gutters and downspouts can get clogged with leaves and debris. Shrubs and branches touch the house, and moss grows on the roof.



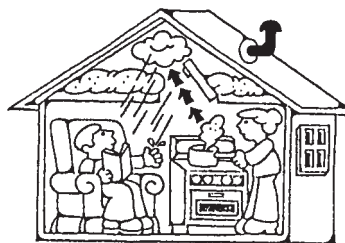
Keep gutters and downspouts clean. Cut branches that touch the house. Clean moss off of the roof.

Taking long HOT showers, or filling the tub to where water splashes out, will cause moisture problems. Leaving the toilet seat up will add moisture to the air.



Taking shorter showers, using less water in the tub, and keeping the toilet seat down will help reduce moisture problems.

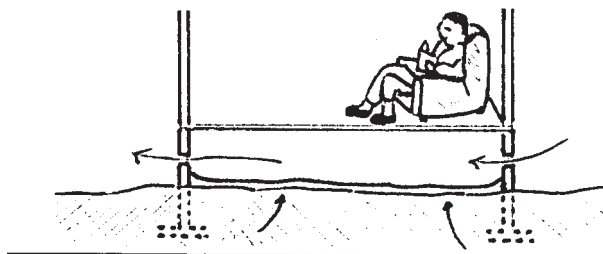
The bathroom exhaust fan vents into the attic. The clothes dryer vents into the basement or crawl space. Kitchen fans vent into the attic. Cooking can put lots of moisture into the air.



Make sure that all exhaust fans vent all the way to the outside of your home.

Make sure all pots and pans have tight fitting lids when cooking.

Moisture in the ground can move up under your home and into the wood. Your house does not have foundation venting. Broken or leaking pipes create wet areas in your walls and under your floors.

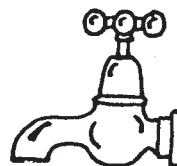
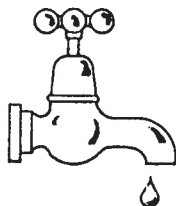


Cover the ground in the crawl space with a six mil black plastic ground cover. Install foundation vents. Make sure there are no pipes leaking; if they are, get them fixed.

WATER HEATING

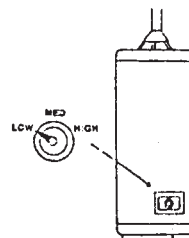
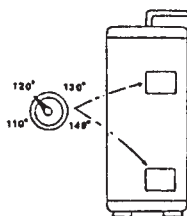
After space heating, HEATING WATER can be the second largest use of energy in the home.

A leaky HOT water faucet will cost you more.



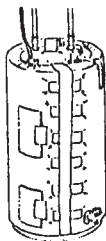
Check all HOT water faucets. If you find a leak, fix it. Most leaking faucets are easy to fix.

How HOT is your water? Heating water HOTTER than you need will waste energy and cost you more.



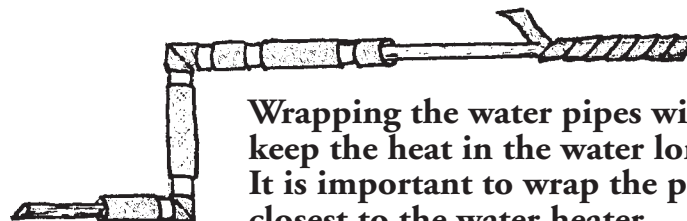
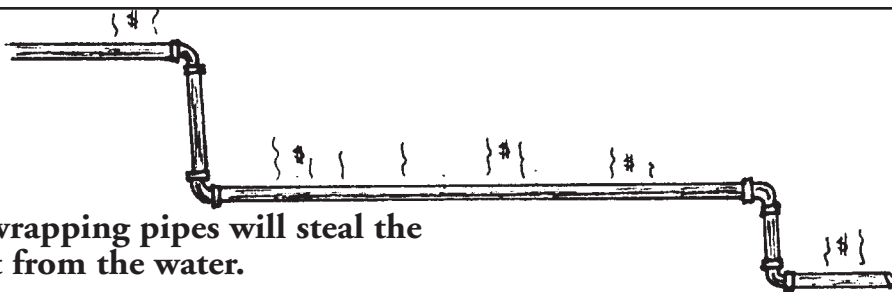
Your water heater should be set at 120° or less. Measure the water temperatures at the faucet. Adjusting your water heater will save you energy and money.

An unwrapped water heater will work harder to keep your water HOT.



Wrapping your water heater will keep your water HOT and save energy and money.

Unwrapping pipes will steal the heat from the water.



Wrapping the water pipes will help keep the heat in the water longer. It is important to wrap the pipes closest to the water heater.

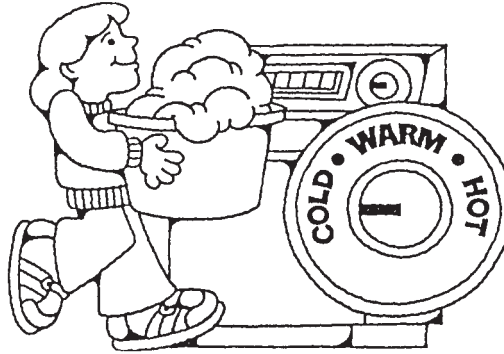
To keep your water heater in good working order, flush out 1/4 of the water every six months.

WASHING

Washing is one area where a few simple tips can save energy.

WHEN WASHING CLOTHES ...

1. Washing clothes in cold water
2. Wash full loads, or reduce the amount of water used.
3. Sort clothes by: weight, color, and type.
4. Don't oversuds.
5. Double spin heavy clothes.



6. Dry clothes outside. Use the sun when you can.
7. Keep the dryer vent and lint filter clean.
8. Sort clothes into fast drying and slow drying.
9. Use auto dry setting, if available.

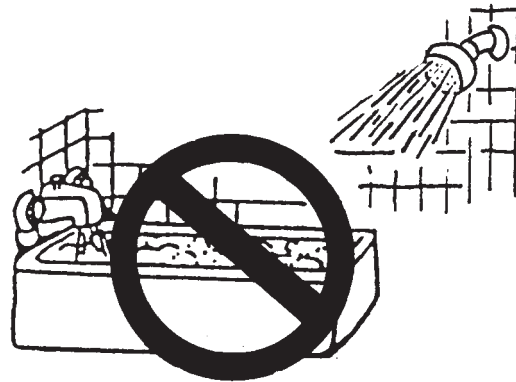
WHEN WASHING DISHES ...

1. Fill a basin with hot soapy water and another with clean rinse water.
2. Avoid letting the water run.
3. If you use a dishwasher, allow dishes to air dry.
4. Wash only full loads in the dishwasher.



PERSONAL HYGIENE ...

1. Fill the sink with water. Letting the water run down the drain while washing is a waste.
2. Wait until the toothpaste is on the brush before you turn the water on. Turn water on to rinse toothbrush, avoid letting the water run.
3. A full tub may be fun, but less water gets you just as clean.



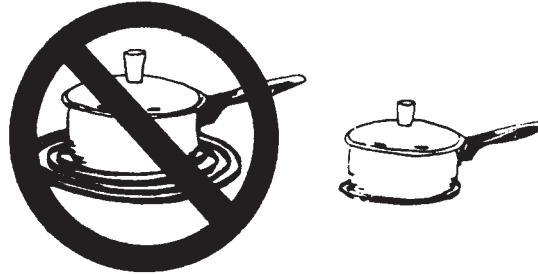
4. A shower will use less water than a bath.
5. A LOW-FLOW showerhead will use less water than a regular showerhead, and will get you just as clean.
6. Using a timer in the shower will help remind you to save energy and water.

Using flow restricters and low-flow showerheads will help you save: energy, water, and money.

EFFICIENCY ON THE RANGE

Getting the best energy efficiency out of your range top burners should be high on everyone's menu.

Always match your pots and pans to the burner. The wrong size can waste energy and may take longer for your food to cook.



A small pan on a large burner wastes energy. A large pot on a small burner will take longer to boil.

Keeping a lid on pots and pans while cooking saves energy and helps the meal cook faster.



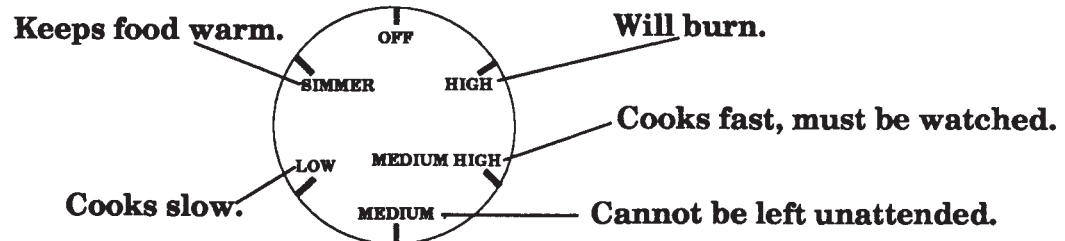
There are many lids in the world, use the one that fits the best.

The more water you use, the longer it takes to boil. Boiling only what you need saves water, energy, and money.



Many foods give off water when cooked. Using an exhaust fan will help remove excess moisture from your home. Use the fan as long as it's needed, then turn it off.

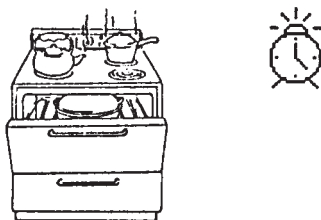
The best meals are cooked at the proper setting. Choose the setting that works best for the meal you are cooking. A well done meal is not always done well.



NOW YOU'RE COOKING

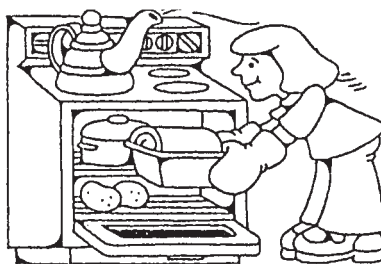
How you cook determines if you're wasting energy.

Using a timer takes the guesswork out of cooking. Set the timer so you know when to check on your cooking.



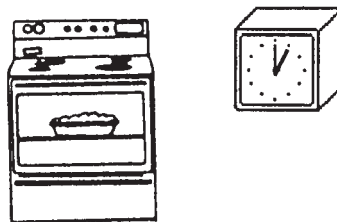
In most cases, you can turn off the oven before the food is done, the food will continue to cook in its own heat.

Try to use all the space in your oven, cook as many things as you can at one time. Use a toaster oven for small meals.



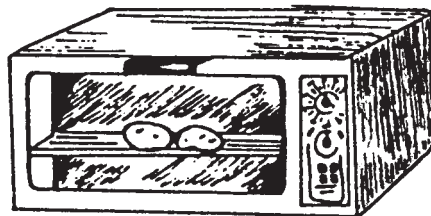
Pre-cooked meals and leftovers use less energy to heat up.

Pre-heat the oven for five minutes **ONLY** when baking bread, cakes or pastries. Everything else can go in when you turn the oven on.



Allow frozen foods to thaw before cooking.

Using a microwave oven is a fast and energy efficient way to cook.



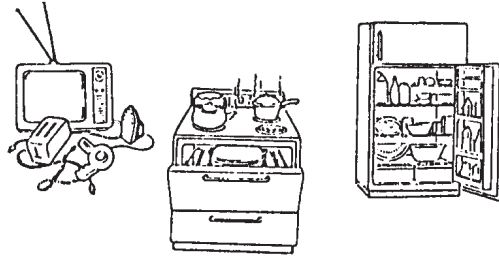
Checking the temperature in your oven with a high temperature thermometer. Too much heat will burn your meal and waste energy too.

The right temperature and the right amount of time cooks the meal just fine.

APPLIANCES

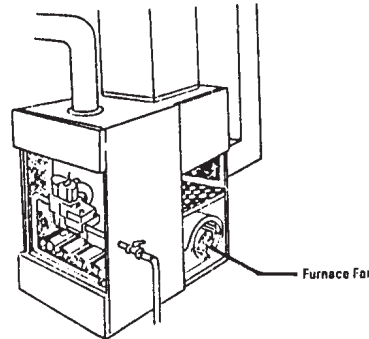
Not all appliances use the same amount of energy. Knowing which appliances use the most energy will help you make good energy choices.

Every appliance you have uses a different amount of energy. The size of the appliance is one way to determine how much energy it uses.



For the most part, it can be said that large appliances use more energy than small appliances. The real factor behind energy use is the amount of WATTS it takes to operate the appliance, and HOW LONG you use the appliance.

Some appliances won't work well unless other appliances are also working. When other appliances are involved, the amount of energy that is needed increases.



You can't use a VCER without a TV, and it's also hard to play video games without the TV on. You may have a gas or oil furnace, but it takes the furnace fan, powered by electricity, to move the heat around your house.

The best way to control your energy use is to know how much energy your appliances use.



Be sure to TURN IT OFF when you're done using it.

Many people keep the TV on so there is noise in the house. The radio will make just as much noise, and it uses less energy.



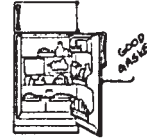
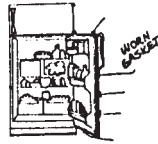
Make a list of all the appliances that are on. Then go out and look at your electric meter. Watch how fast the wheel is turning. Turn off some appliances and take another look at the wheel, see the difference?

YOU CAN STOP YOUR ENERGY DOLLARS FROM RUNNING OFF UNNOTICED.

REFRIGERATORS AND FREEZERS

Your refrigerator and freezer will use more energy than necessary if you let them get away with it.

Worn gaskets on the door of the refrigerator and freezer will waste energy.



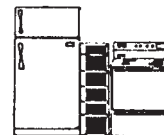
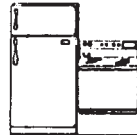
Check to see if the gaskets need to be replaced. If a piece of paper falls out when the door is closed, it's time to replace the gasket.

Dust on the coils of the refrigerator and freezer will make the motor run harder, using more energy.



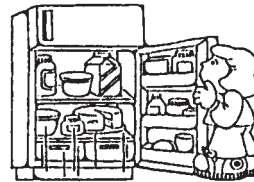
Keep the coils and motor clean, check once a month for dust.

If your refrigerator or freezer is near a heat source, it will use more energy to keep the food cold or frozen.



Keep your refrigerator and freezer away from direct heat. Use the energy saver button, if available, in summer or if sweat is visible inside.

Standing in front of the refrigerator with the door open is a very good way to waste energy.



Know what you want before opening the door. Make a list of what's inside. Take everything out that you need and put everything back at one time.

Defrost when ice is 1/4 inch thick.

Let food cool before placing in the refrigerator.

Cover everything you put in the refrigerator.



Avoid frost build-up, which makes the refrigerator work harder.

Placing hot food and dishes in the refrigerator will increase the use of energy.

Moisture from uncovered foods and liquids will cause the refrigerator to use more energy.

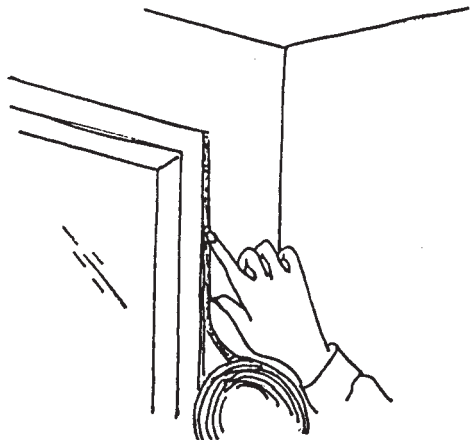
Temperature settings should be between 38° - 40° in the refrigerator and 0° in the freezer.



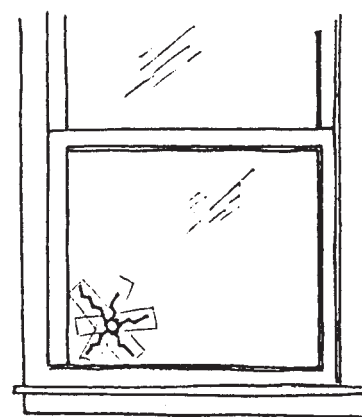
Check the temperature to make sure it's at the right setting. Use a thermometer and adjust the setting, if necessary.

SELF-HELP WEATHERIZATION

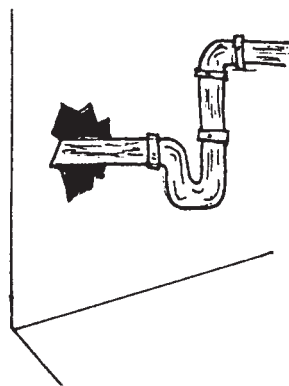
Reduce cold air drafts by plugging leaks on the inside of the home. Inexpensive materials can be used.



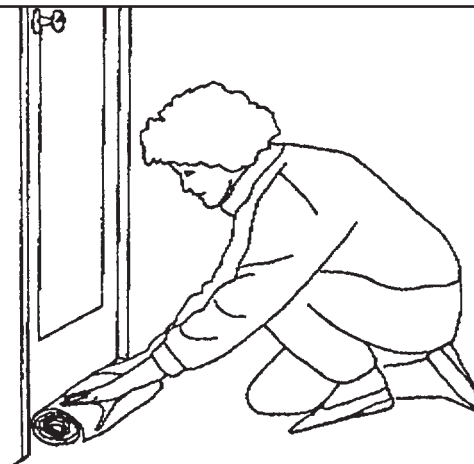
Rope caulk is cheap, available at hardware stores and easy to use. Press into place around window and door frames. It peels off easily and leaves no marks.



Cracked windows can be sealed with clear packaging tape or clear caulk.



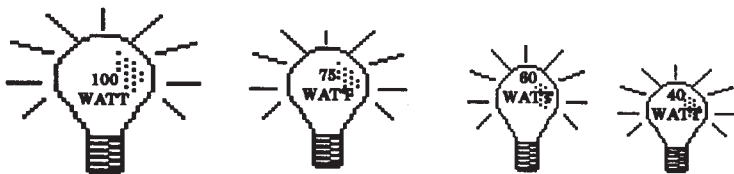
Areas that lose heat: outside walls, cracks or holes in plaster, drywall, and openings around wires and pipes. Patch them with a patching plaster or tape and cardboard. It's easy to do and saves energy too.



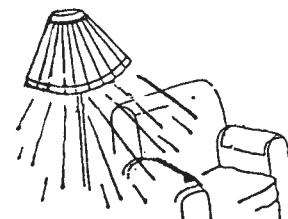
The space under the door is a great place for cold air to get into your home. Stop it with a door sweep, door snake, or a rolled up rug.

ILLUMINATION

The best way to use lighting is to illuminate only the area you want.



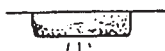
Light bulbs are measured in WATTS. Higher WATTS use more energy. Not all activities need the same amount of light. Using too large a wattage will waste energy.



Think about the amount of light or illumination you need, then match the light to the activity.

The new technology of COMPACT FLOURESCENT lighting can use less wattage and produce the same illumination as bulbs with much higher wattage.

Compact flourescent lights last longer and save energy because they use fewer WATTS.



Dust builds up on the surface of all light bulbs. Over time, dust will reduce the amount of illumination a light bulb gives off.



Clean the light bulb and the fixture regularly so that all the light gets through.



A single light is inexpensive to operate, however, when all the lights are burning the cost goes up quickly.



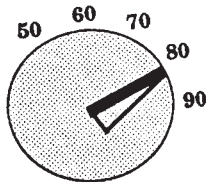
If everyone would turn off the light when they leave the room or when they finish what they are doing, a lot of energy and money could be saved.

If you need a light for security, use a night light or a compact flourescent.

FORCED AIR FURNACES

Proper care and maintenance will help your furnace operate more efficiently, making you more comfortable and saving you money.

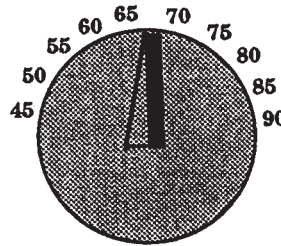
You waste energy when ...



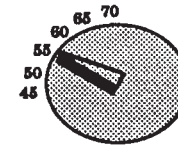
You turn up the thermostat whenever you feel cold.

Energy Tip

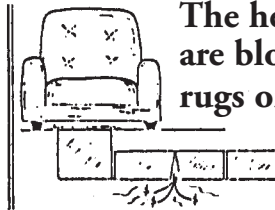
Set the thermostat at 68°



You save energy when ...



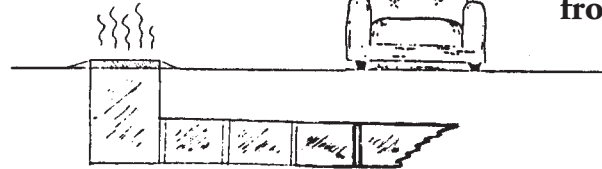
You set the thermostat at 68° when you're at home. Lower the thermostat to 55° at night or when you're not home. Dress in layers to keep warm.



The heat registers are blocked by rugs or furniture.

The heating ducts leak.

Keep registers clear and open. Fix leaks in the duct work.



You keep the registers at least 10% open, never closed, even in rooms not used. Keep furniture and rugs away from registers.

Check the filter. Have the furnace cleaned and tuned.

The air filter on the furnace is clogged with dirt. You don't know where the furnace is or when it was last tuned up.



When in use, you check the furnace filter monthly, and replace as needed. Have the furnace cleaned and tuned by a qualified service person.

If you have a forced air oil furnace, check the inline oil filter. If this filter becomes clogged, the furnace may shut off. Use a dip stick to check the amount of oil in your oil tank.